

Moisture Control Technologies for Industrial and Agricultural Applications

"Dantec initially developed core technologies for agricultural drying which resulted in energy savings and yield increases. We then recognized the opportunity to achieve the same benefits in industrial processing. Through the assistance of the Ontario Ministry of Environment and Energy, we were able to extend our core technologies and have successfully applied them in many industrial applications. We are continuing to work with our customers to improve their processes through automation and save energy. The Ministry's assistance has acted as a catalyst to bring together a partnership of government and industry to work together toward common beneficial goals."

Gerald G. Dubrick
Founder, Dantec Systems Corporation
Waterloo, Ontario

THE COMPANY

Dantec provides cost-effective measurement and control solutions to a wide range of companies which process dried particulate products. Dantec's equipment continuously measures and controls moisture levels. It includes on-line sensors for moisture and other properties, computer hardware and software and electronics to link the sensors to the computer system. Further, the company offers commissioning, training and support services. In short, Dantec helps its customers around the world to be more competitive by producing a better quality product.

Right now, the company is focusing its research and development on increasing the technology's range so that it can be used for processing natural grains, oil seed meals, pet foods, processed animal feeds, starch and starch by-products, breakfast cereals, processed instant rice, and dried sand and gravel aggregates.



Dantec's industrial control system for plant-floor applications

CHALLENGE

Dantec identified industrial drying and moisture removal as a potential market for its process control systems. A large number of industries use dryers which often waste energy and have unreliable instruments - which means the products are dried too long.

With funding from the Ministry of Environment and Energy, Dantec undertook to develop a technological solution to this problem.

In the first phase, Dantec developed instruments which would measure moisture reliably and which could be used on a number of products and processes.

In the second phase, the company worked on a generic model-based control system which could be easily applied to different types of dryers and other moisture-removal equipment.

OPPORTUNITIES

Before 1990, Dantec's business centered on control systems for agricultural dryers. By applying its technology to industry Dantec would open up a much larger market for its control systems. The move would also save energy since industrial dryers usually run all year and agricultural dryers run for about eight weeks at harvest time.

The benefits to dryer operators include:

- * increased production and lower energy costs by reducing over-drying;
- * improved product quality;
- * better use of raw materials because there is less waste;
- * reduced air pollution because of lower combustion emissions.

Dantec targeted and successfully marketed its industrial measurement and control solutions to bakeries, pet food plants, breakfast cereal producers, engineered-wood plants and other types of industries in North America and Europe.

RESULTS

In the first phase, Dantec was able to develop a moisture-sensing technology that could be configured to provide measurements in three different ways. These sensors can be used on materials ranging from sand and gravel to chocolate-chip cookies.

In the second phase, Dantec developed generic model control algorithms which could be applied to the many different dryers and ovens used in the company's target markets. These dryers and ovens include rotary natural-gas-fired kilns, rotary steam-tube dryers, natural-gas and steam-heated conveyor dryers, and natural gas-heated conveyor ovens.

Dantec also installed communications hardware in the drying systems so the company could communicate directly with them. The hardware allows Dantec to give its customers remote analysis and product updates as well as monthly reports detailing operation and performance of the control system.

Dantec continues to support its products through its Extended Support Program (ESP), which is available after the first year of operation.

To date, Dantec has installed control systems on approximately 80 per cent of the corn dryers in Ontario.

The company's systems are also measuring and controlling about 35 per cent of the pet food produced in North America.

Dantec's customers typically achieve yield increases of one to two per cent and energy savings of up to \$30,000 per year. These benefits allow customers to recuperate their investment in one to two years.

Today Dantec employs 31 people in its industrial and agricultural divisions. With its established base of Canadian and American clients and the development of overseas markets, Dantec is anticipating a growth rate of 50 per cent over the next five years.

PARTNERSHIP IN POLLUTION PREVENTION AND RESOURCE CONSERVATION

Industrial companies located in Ontario may participate in ministry/industry programs which will help them to:

- * reduce, reuse and recycle solid waste;
- * reduce or eliminate liquid effluent and gaseous emissions;
- * use energy and water more efficiently.

Equipment and services supply companies can benefit from the information provided on technologies identified for business development.

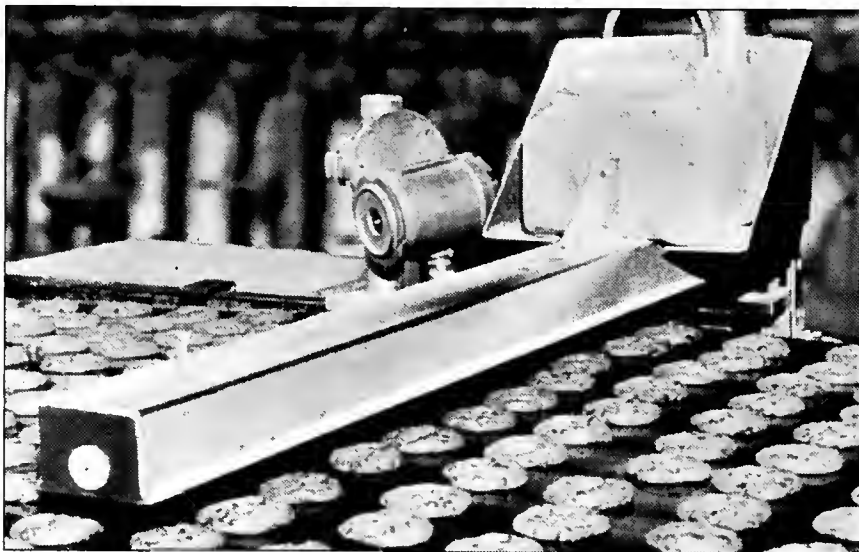
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For information on Ministry of Environment and Energy assistance to industry, please contact the Industry Conservation Branch at (416) 327-1429, Fax (416) 327-1261.



Dantec's "Non-Contacting" Moisture Sensor is being used in moisture-control of the cookie-baking process.

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